CLAIMS

What is claimed is:

1.   A method for providing the playback of an audio sequence within an electronic device, the electronic device including a memory element, a first processing unit and a second processing unit, the method comprising the steps of:

(a) storing data representing a preset tone pattern into the memory element;

(b) accessing the memory element with the first processing unit and obtaining a first portion of the preset tone pattern data;

(c) providing the first portion of the preset tone pattern data obtained by the first processing unit to the second processing unit; and

(d) the second processing unit providing a playback of the first portion of the preset tone pattern data.

2.   A method for providing the playback of audio sequences within an electronic device, the electronic device including a memory element, a first processing unit and a second processing unit, the method comprising the steps of:

(a) storing data representing a plurality of preset tone patterns into the memory element;

(b) accessing the memory element with the first processing unit to obtain data representing a first portion of a particular one of the plurality of preset tone patterns;

(c) providing the data representing the first portion of the particular one of the plurality of preset tone patterns to the second processing unit; and

(d) the second processing unit converting the data representing the first portion of the particular one of the plurality of preset tone patterns into an audio sequence.

3.   The method of claim 2, further comprising the steps of:

providing an indicator to the first processing unit when the second processing unit has completed converting the first portion of the particular one of the plurality of preset tone patterns;

accessing the memory element with the first processing unit to obtain data representing a next portion of the particular one of the plurality of preset tone patterns; and

continuing at step (c) with the next portion.

5   4.   The method of claim 2, further comprising the steps of providing a playback of the audio sequence.

5.   The method of claim 4, further comprising the steps of:

receiving an indicator at the first processing unit, the indicator requiring processing of an intervening tone pattern of the plurality of tone patterns;

10   in response to receiving the indicator at the first processing unit, providing an interrupt signal to the second processing unit;

in response to receiving the interrupt signal at the second processing unit, interrupting the playback of the audio sequence;

accessing the memory element with the first processing unit to obtain
15   data representing a first portion of the intervening tone pattern of the plurality of preset tone patterns;

providing the data representing the first portion of the intervening tone pattern of the plurality of preset tone patterns to the second processing unit;

the second processing unit converting the data representing the first
20   portion of the intervening tone pattern of the plurality of preset tone patterns into an audio sequence; and

providing the playback of the audio sequence.

6.   The method of claim 5, further comprising the steps of:

resuming the playback of the particular one of the plurality of tone
25   patterns upon completing the play back of the audio sequence for the intervening tone pattern.

7.   A method for reducing the processing requirements of a first processing unit in providing the playback of an audio sequence within an electronic device by off loading processing to a second processing unit, the electronic device including a shared memory element that the first processing unit and the second processing unit can access, the
30   method comprising the steps of:

storing data representing a preset tone pattern into a first memory element accessible by the first processing unit;

the first processing unit,

detecting an event that requires the playback of an audio

5   sequence;

reading a first portion of the preset tone pattern data from the first memory element;

storing the first portion of the preset tone pattern data into a first section of the shared memory element;

10   the second processing unit,

accessing the first portion of the shared memory element to retrieve the first portion of the preset tone pattern data; and

converting the preset tone pattern data into an audio sequence.

8.   A method for reducing the processing requirements of a first

15   processing unit in providing the playback of an audio sequence within an electronic device by off loading processing to a second processing unit, the electronic device including a shared memory element that the first processing unit and the second processing unit can access, the method comprising the steps of:

the first processing unit,

detecting an event that requires the playback of an audio

20   sequence; and

providing a first portion of data representing a preset tone pattern to the second processing unit;

the second processing unit,

25   sequentially converting the preset tone pattern data into an audio sequence; and

providing an indicator to the first processing unit when a second portion of data representing the preset tone pattern is required.

30   9.   A method for providing the playback of an audio sequence within an electronic device, the electronic device including a memory element, a first processing unit and a second processing unit, the method comprising the steps of:

(a) storing data representing a tone pattern into the memory element;

(b) accessing the memory element with the first processing unit and obtaining the tone pattern data;

(c) providing the tone pattern data obtained by the first processing unit to the second processing unit; and

(d) the second processing unit providing a playback of tone pattern data.

10. The method of claim 9, wherein the tone pattern is downloadable to the first processing unit from an external source and further comprising the step of:

accessing the external source to obtain the tone pattern.

11. An apparatus that provides reduced processing requirements of a host processing unit for the playback of an audio sequence comprising:

a host processing unit coupled to a first memory element;

a supplemental processing unit coupled to a second memory element;

an interface means between the host processing unit and the supplemental processing unit;

the host processing unit being operative to:

store data representing a tone pattern into the first memory element;

detect an event that requires the playback of an audio sequence;

read at least a portion of the tone pattern data from the first memory element; and

provide the at least a portion of the tone pattern data to the supplemental processing unit through the interface means;

the supplemental processing unit being operative to:

receive the at least a portion of the tone pattern data; and

convert the at least a portion of the tone pattern data into an audio sequence.

12. The apparatus of claim 11, wherein the interface means is a shared memory element that the host processing unit and the supplemental processing unit can access.

13. The apparatus of claim 11, wherein the interface means is an electronic connection between the host processing unit and the supplemental processing unit.

14. The apparatus of claim 11, wherein the interface means is wireless interface.

15. An apparatus that provides reduced processing requirements of a host processing unit for the playback of an audio sequence comprising:

a host processing unit coupled to a first memory element;

a supplemental processing unit coupled to a second memory element;

an interface means between the host processing unit and the supplemental processing unit;

the host processing unit being operative to:

store data representing a tone pattern into the first memory element;

detect an event that requires the playback of an audio sequence;

read a first portion of the tone pattern data from the first memory element; and

provide the first portion of the tone pattern data to the supplemental processing unit through the interface means;

the supplemental processing unit being operative to:

receive the first a portion of the tone pattern data; and

convert the first portion of the tone pattern data into an audio sequence.

16. The apparatus of claim 15, wherein the interface means is a shared memory element, the shared memory element including two memory pages, a control register, and a status register, and the host processing unit is operative to provide the first portion of the tone pattern data to the supplemental processing unit by:

storing the first portion of the tone data into a selected page of the two memory pages; and

controlling the operation of the supplemental processing unit by setting and resetting bits in the control register.

17. The apparatus of claim 15, wherein the tone data is MIDI sequences.

18. The apparatus of claim 15, wherein the tone data is an MP3 file.

19. The apparatus of claim 15, wherein the tone data is a WAV file.

20. A method for a host processing unit to the playback of tone data by a supplemental processing unit, the tone data comprising note on events, note off events, stop sequence events and loop sequence events, the method comprising the steps of:

providing a first segment of tone to the supplemental processing unit;

setting a start status, the start status causing the supplemental processing unit to begin processing the tone data at the beginning;

setting a stop status, the stop status causing the supplemental processing unit to stop processing the tone data at the current location; and

setting a loop status, the loop status causing the supplemental processing unit, in response to processing a stop sequence event or a loop sequence event, to resume processing the tone data at the beginning.

21. An apparatus for enabling a host processing unit to control the operation of the playback of tone data by a supplemental processing unit, the tone data comprising note on events, note off events, stop sequence events and loop sequence events, the apparatus comprising:

a first memory page for receiving tone data from the supplemental processing unit;

a second memory page for receiving tone data from the supplemental processing unit;

a START_BIT, whereby when the START_BIT is in a first state, the supplemental processing unit will begin processing the tone data at the beginning of the first memory page;

a STOP_BIT, whereby when the START_BIT is in a first state, the supplemental processing unit will stop processing the tone data at the current location;

a LOOP_BIT, whereby when the LOOP_BIT is in a first state and the supplemental processing unit is processing a stop sequence event or a loop sequence event, the supplemental processing unit will resume processing the tone data at the beginning of the first memory page; and

a BOUNDARY_STATUS, whereby when the supplemental processing unit completes processing the tone data in a first memory page and begins processing the tone data in the second memory page, the BOUNDARY_STATUS is set to a first value and when the supplemental processing unit completes processing the one data in the second memory page and begins processing the tone data in the first memory page, the BOUNDARY_STATUS is set to a second value.